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REMARKS

Claims 1–20 are pending in the present application.

Reconsideration of the claims is respectfully requested.

35 U.S.C. § 102 (Anticipation)

Claims 1–7 and 9–18 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,853,657 to *Althaus*. This rejection is respectfully traversed.

A claim is anticipated only if each and every element is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim. MPEP § 2131 at p. 2100-76 (8th ed. rev. 5 August 2006).

Claim 1 recites that the forward voltage is employed to determine a forward current through the light source. Claim 9 similarly recites employing a forward voltage to determine a forward current through a light source, while claim 15 recites that the forward voltage is employed to determine one or both of a forward current through the light source and a die temperature for the light source. Such a feature is not found in the cited reference. The cited portions of *Althaus* read:

> It is accordingly an object of the invention to provide a method and a device for simply and precisely determining the output power of a semiconductor laser diode, which overcome the above-mentioned disadvantages of the prior art apparatus and methods of this general type, and which do not require a monitor diode.
>
> With the foregoing and other objects in view there is provided, in accordance with the invention, a method for determining an output power of a semiconductor laser diode being operated with a diode current. The method includes steps of: conducting a defined measuring current through the semiconductor laser diode in a forward direction, the measuring current being smaller than a threshold current of the semiconductor laser diode; measuring a forward voltage being dropped across the

> semiconductor laser diode as a result of the measuring current; and using at least one calibration curve to determine the output power of the semiconductor laser diode from the forward voltage that was measured.
>
> With the foregoing and other objects in view there is also provided, in accordance with the invention, a measuring device for determining an output power of a semiconductor laser diode being operated with a diode current. The measuring device includes: a device for generating a defined constant measuring current; a device for detecting the forward voltage being dropped across the semiconductor laser diode when the defined measuring current is conducted in the forward direction through the semiconductor laser diode; and a device for determining the output power of the semiconductor laser diode from the forward voltage that is measured and at least one calibration curve.
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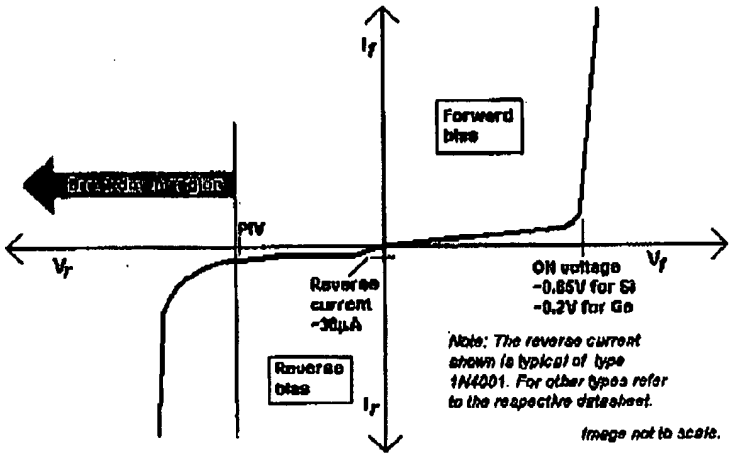
> . . . .
>
> The measuring device for determining the output power of a semiconductor laser diode that is operated with a diode current has the following elements: a) a device for generating a defined, constant measuring current, b) a device for detecting a forward voltage that drops across a semiconductor laser diode through which the defined measuring current is conducted in the forward direction, and c) a device which determines the output power of the semiconductor laser diode from the measured forward voltage by using at least one calibration curve that is preferably specific to the diode current. The measuring device in this case executes the method explained above.

Althaus, column 2, lines 22–52, column 4, lines 38–49. Thus *Althaus* specifically teaches using a defined, constant measuring current and measuring the forward voltage drop across the laser diode to determine output power using a calibration curve. *Althaus* does not teach using the measured forward voltage drop to determine forward current as required by the claims.

The final Office Action asserts:

> Examiner disagrees with this argument because these newly amended limitations actually do not limit the claimed invention because they are believed to be inherent features since voltage and current have a direct relationship from the equation V=IR. Once voltage is determined, current will be calculated based on the resistance of impedance and the measured voltage.

Paper No. 20060908, page 2. From a technical perspective, this assertion is incorrect since Ohms's Law (V=IR) is only applicable to ohmic devices – which does not include diodes (or, in the instant case, laser diodes). The current-voltage relationship for pn junction diodes in general is known to be as follows:



While the current-voltage relationship for a laser diode is not necessarily identical to that depicted above, it is known to also be non-ohmic. *Althaus* actually teaches that the current-voltage relationship for a laser diode is non-ohmic, since a defined measurement current is passed through the diode and the forward voltage drop measured. If current and voltage were related by Ohm's Law as asserted in the Office Action, measurement of the forward voltage drop would be unnecessary.

More to the point, regardless of whether one could (in theory) derive the current through a laser diode from the measured forward voltage drop, *Althaus* does not teach employing the measured forward voltage drop to determine forward current as required by the claims. Accordingly, the

inherency argument fails since the mere possibility of accomplishing the claimed function if an appropriate step is taken or means is provided does not ***anticipate*** the claims where performing the step or providing the means is not taught or suggested by the cited reference. "Implicit disclosure" may be a basis for an obviousness rejection under 35 U.S.C. § 103, but cannot form the basis for an anticipation rejection under 35 U.S.C. § 102. See MPEP § 2144.01, page 2100-133 (8th ed. rev. 5, August 2006).

Claims 4, 12 and 15 each recite that the forward voltage is employed to determine a die temperature for the light source. Such a feature is not found in the cited reference. The cited portion of *Althaus* reads:

> The method proposes a novel approach in measuring the output power of a semiconductor laser diode, since the determination of the output power is performed not via additional measuring elements, but via the physical semiconductor property of the temperature dependence of the forward voltage of the semiconductor laser diode. In this case, use is made of the physical effect that the forward voltage of a semiconductor laser diode varies with the temperature of the laser-active region of the semiconductor laser diode when the semiconductor laser diode is operated with a constant measuring current that flows in the forward direction and that is below the threshold current. The output power of the semiconductor laser diode likewise varies with temperature.
>
> The exact temperature dependence of the forward voltage and thus also the functional dependence of the forward voltage on the respective output power is determined for a semiconductor laser diode, individually by using calibration curves that are recorded. There is a need to record a specific calibration curve in each case for a multiplicity of different diode currents. This family of the calibration curves required for using the semiconductor laser diode is preferably already determined by the module manufacturer and is stored in a storage device of the module.
>
> . . . .
>
> Using the data from the family of characteristic curves which represent the relationship between the forward voltage and the output power of the semiconductor

> laser diode for a multiplicity of different diode currents, the output power of the laser-active region of the semiconductor laser diode can be determined precisely at any time solely by measuring the forward voltage.

Althaus, column 2, line 63 through column 3, line 19, column 3, lines 24–30. Thus, while *Althaus* notes the dependence of forward voltage on temperature, *Althaus* does not teach or suggest employing the forward voltage to determine temperature. Instead, *Althaus* teaches employing the forward voltage to determine output power directly from a family of calibration curves (based on different currents) without first determining temperature.

Therefore, the rejection of claims 1–7 and 9–18 under 35 U.S.C. § 102 has been overcome.

35 U.S.C. § 103 (Obviousness)

Claims 8 and 19–20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Althaus* in view of U.S. Patent Application Publication No. 2005/0249252 to *Sanchez*. This rejection is respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. MPEP § 2142, p. 2100-125 (8th ed. rev. 5 August 2006). Absent such a *prima facie* case, the applicant is under no obligation to produce evidence of nonobviousness. *Id.*

To establish a *prima facie* case of obviousness, three basic criteria must be met: First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference

teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *Id.*

As an initial matter, Applicant respectfully notes that *Sanchez* was filed on April 21, 2005, and claims priority to provisional application USSN 60/564,143 filed April 21, 2004. Neither of those filing dates entitles *Sanchez* to prior art status under 35 U.S.C. § 102(e) to the present application. *Sanchez* also claims priority as a continuation-in-part to PCT/US03/00463 (WO 2004/064210). However, because the priority claim is as a continuation-in-part, no presumption may be made that the prior application contained the subject matter relied upon in the Office Action when filed.

Regardless, the rejected claims depend from independent claims 1 and 15. As described above, independent claims 1 and 15 each recite features not found in *Althaus*. Such features are also not found in *Sanchez*. Accordingly, independent claims 1 and 15 and dependent claims 8 and 19–20 are not obvious over the combination of *Althaus* and *Sanchez*.

Therefore, the rejection of claims 8 and 19–20 under 35 U.S.C. § 103 has been overcome.

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at ***wmunck@munckbutrus.com***.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

MUNCK BUTRUS, P.C.

Date: Nov. 13, 2006

William A Munck
Registration No. 39,308

P.O. Drawer 800889
Dallas, Texas 75380
(972) 628-3600 (main number)
(972) 628-3616 (fax)
E-mail: *wmunck@munckbutrus.com*